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VETERINARY MEDICINES;

THEIR

NATURE, PROPERTIES AND DOSES.

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VIRTUE LIBERTY AND INDEPENDENCE

VETERINARY MEDICINES;

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During eighteen years of practical experience with the diseases of animals, as special agent of the Governor, under the act of May 1, 1879, and as Secretary of the Board of Agriculture, under act of May 9, 1888, and under previous acts, the writer has often felt the want of a condensed compilation showing the nature, properties and doses of the more common veterinary medicines, and of having them collected into a form of admitting of easy reference. Under the present system adopted by veterinary writers, the different remedies, their properties and doses, are usually scattered throughout the whole volume, and, especially with practical farmers, great difficulty is experienced in adapting them to such portions of veterinary practice as are usually forced upon the owners of live stock who are distant from veterinary surgeons, and who, even after the veterinarian has been sent for, are anxious to do something which may, if possible, decrease the difficulties of his task when he reaches the sick animal.

With this purpose in view, the following compilation has been made, and for it the writer claims no new or recent discoveries, but he has simply attempted to put the matter into such shape as will make it available to those into whose hands this bulletin may go. It has been his desire to avoid the use of scientific terms and of language not readily understood by the practical farmer, but, in many cases, the use of a somewhat uncommon term will materially shorten and simplify the meaning; in such cases, words used by medical writers have been used, and the following list of them and their signification has been prepared with the hope that it may explain anything of a scientific character which may appear in the subsequent article.

Only the more prominent and most commonly used words have been selected, and numerous sub-divisions have not been noted; in many cases, for the precision required by veterinary science, some of the classes have been sub-divided into three or more classes, so that the exact meaning of each may be more closely determined; these are seldom, if ever, used in the practical part of veterinary practice which falls to the lot of the farmer, and we, therefore, have given them no attention. There are, also, numerous synonymous terms used, which are, for a like reason, not placed in the list.

In treating of the nature and properties of veterinary medicines the following terms are repeatedly used, and when thus used are intended to convey the meanings attached to them in the following list:

DEFINITION OF TERMS.

Anti-periodics.—Medicines given in cases in which the outbreaks or manifestations of the disease occur at regular periods; their intended effect is to prevent the recurrence of the outbreak at its regular period, and thus cure the disease. In the human race, the best example is probably that of remedies employed in cases of fever and ague and malarial complaints. In such cases if, by the use of antiperiodics, such as quinia, the recurrence of the disease at its stated periods, in the form of either fever or chill, can be prevented, a marked progress has been made toward a cure.

Anti-spasmodics.—This term is applied to a class of medicines which are given on account of their property of preventing or affecting spasms; they may be divided into two classes: stimulants, which are used in cases of extreme debility, and sedatives, which are used in cases of active irritation.

Alteratives.—A class of remedies which act upon the nutritive organs of the system, and, by reason of removing abnormal or improper material, assist in effecting a cure. Some writers apply this term to such medicines as produce the above effect without any increase in the amount of urine or other secretions, but this definition is scarcely necessary for the purposes for which we may use the term.

Astringents.—Medicines which have the property of drawing up or contracting certain tissues of the body and thereby lessening the discharges which are caused by disease. When this class of remedies are applied to the external surface of the body they are often styled styptics. Alum and oak bark may be given as familiar instances of this class.

Anti-lithics.—Which are given on account of their real or supposed power of dissolving or preventing the formation of calculi (stones) in the bladder and kidneys. Inasmuch as the formation of calculi is caused by an improper condition of the system, it is hardly probable that anything will remove them until this condition is changed and the proper condition restored.

Anti-septics.—Used to prevent or retard putrefaction and sloughing of external wounds, and which, by preventing or removing the matter thus formed, prevent its absorption into the system. As a general rule they act rather as removers of this kind of material, rather than as preventatives.

Anaesthetics.—Remedies which destroy the sense of feeling; they, in no sense of the word, cause cures, but merely relieve the pain and thus assist nature in her efforts.

Anti-acids.—Agents which neutralize or prevent the formation of acids and their attendant gases; lime water and the alkalies may be given as examples of this class.

Anodynes.—Equivalent to anaesthetics; allay pain and quiet the nervous system; cannot be properly styled remedies, as they do not effect a cure.

Aromatics.—Agents which have the odor of spices; used to prevent the formation of gases, or, in the event of their formation, to assist in their expulsion.

Cholagogues.—Applied to a class of medicines which, by acting upon the liver, increase the secretion of bile and assist digestion.

Cathartics.—Medicines which, by increasing the action of the intestines, increase the frequency of the discharges from the bowels, and thus assist in the removal of injurious material from the system. Their action, by stimulating a greater or less portion of the intestines, increase the rapidity with which the contents are passed along and excreted from the system. They are divided into *laxatives*, *eccoprotics* and *aperients*, in accordance with the frequency and vigor of their action; when by overdose their action is greatly increased, they are styled *purgatives*; when dangerously active, they are called *drastic purgatives*.

Carminatives.—Such remedies as promote the throwing off of collected gases; their action in cases of colic is to allay the pain and prevent spasms by preventing the formation of gas.

Demulcents.—Medicines which form a coating over diseased surfaces and promote a cure; often used to allay pain in irritating diseases by excluding air from the injured surface. Gum arabic may be given as a specimen of this class.

Diaphoretics.—Such remedies as are administered for the purpose of increasing perspiration and thus reducing the temperature of the system; sometimes the term *sudorific* is also applied to this class.

Discutients.—External applications, which are applied for the purpose of increasing the secretions and reducing enlargements on the surface of the body. Used in cases of strains and external blows.

Diuretics.—Remedies administered for the purpose of increasing the action of the kidneys and to promote the increase of the discharges from these organs through the bladder in the form of urine.

Disinfectants (antiseptics).—Medicines which have the power to neutralize the offensive discharges from ulcers, fistula and similar diseases; they are not strictly remedies, but they play a not unimportant part in effecting a cure.

Expectorants.—Medicines which increase the formation of mucus discharges in the case of colds, catarrh, etc.; often given in diseases of the nasal passages.

Escharotics.—Remedies administered for the purpose of causing counter-irritation by inflammation on the surface of the body; this class is also sometimes termed *counter-irritants*, because, by producing an irritation which can be controlled, they relieve an irritation which is beyond the reach of the practitioner.

Emollients.—A class of remedies which are applied to the surface of the body for the purpose of softening the skin, and to relax the tense condition of the inflamed surface; by relieving the surface tension, they also affect the deeper seat of trouble.

Errhines.—Remedies snuffed up the nostrils for the purpose of softening inflamed surfaces. The term *sternutories* is also sometimes applied to this class.

Emetics.—Medicines which, by their peculiar action upon the stomach, reverse its natural action and cause the discharge of its contents by way of the throat. Often used in cases of poisoning. Emetics, in small doses, become *nauseants, expectorants, and relaxants.*

Febrifuges.—Remedies which prevent fevers, or which lower the temperature of the body.

Laxatives.—Catharties given in small doses; they produce a relaxed condition of the organ, and do not carry the effect far enough to cause cathartic action.

Nauseants.—Medicines which cause a slight degree of sickness, but not enough to cause vomiting; the best nauseants are emetics given in small doses.

Narcotics.—Administered for the purpose of causing sleep and quieting the nervous system, and assisting a cure in this way. In increased doses, they act as sedatives and produce complications which should be avoided.

Relaxants.—Which operate to decrease the tension of the muscles and muscular organs of the body, and, in some measure, remove the control of the patient over them; in many cases nauseants produce the same effect.

Refrigerants.—Remedies which are supposed to decrease the temperature of the body without seriously affecting the nervous system; their effect with many patients may be that of either a cathartic, diuretic, or even an emetic, as they affect the bowels, kidneys or stomach.

Stimulants.—Having more or less effect upon the whole system by bringing about a healthy circulation; some of this class appear to affect certain organs only, and hence, for the nicer purposes of practice, the class has been sub-divided into several parts.

Sedatives.—Remedies which diminish the action of the nervous system and the force of the circulation of the blood and other fluid portions of the body. They may be sub-divided in three sub-divisions, as they affect the circulation of the blood, reduce muscular action or diminish nervous symptoms.

Soporifics (*sedatives*).—Medicines which produce or cause sleep.

Sialogogues.—Remedies which are given for the purpose of increasing the flow of saliva and stimulating the salivary glands.

Stomachics.—Intended to increase the health action of the stomach and digestive organs, and which are administered in cases of indigestion and similar ailments.

Tonics.—Agents which strengthen weakened or debilitated organs, and which, in many cases, bring about this result by their action upon the nervous system.

Vermifuges.—Remedies which aid in the expulsion of worms from the intestines and anus.

There are numerous other terms used by veterinary writers, such as:

Hypnotics, which cause sleep; *tetanics*, which act upon the nerves and produce twitching; *dilutents*, which increase the fluidity of the blood; *aphrodisiacs*, which are supposed to promote sexual propensities; *antaphrodisiacs*, which are supposed to decrease sexual propensities; *parturifacients*, which promote parturition; *abortives*, which promote abortion, and *detergents*, which cleanse the parts to which they are applied; but the definitions given are sufficient to cover any cases in what may follow, which might in any way confuse the mind of the reader.

THE ACTION OF MEDICINES.

In administering medicines to live stock, the following points should be kept in view.

The horse has a small stomach, in proportion to his size, and in practice it is found best to use vegetable purgatives, which are less irritating than those in the mineral form; vegetable purgatives act but lightly upon the stomach proper, and reserve their main action until they reach the intestines.

Different classes of animals are not only differently acted upon by the same remedy, but they are also affected individually to a greater or less degree. Thus, tartar emetic, which in small doses will cause severe vomiting in the dog, will produce little or no effect upon a horse.

Vomiting with the horse becomes a very difficult action on account of the small size of the stomach, which does not appear to have sufficient muscular power to force its contents outward against the strong muscular ring with which the opening from the throat is guarded.

Finlay Dunn writes: "Most substances which act as emetics for men and dogs, are supposed to produce sedative effects, when given to horses in sufficient doses; but the many sedatives available in human and canine practice operate uncertainly and imperfectly in horses, for which aconite is the chief reliable sedative."

Cattle require larger doses, in proportion to their weight, than other classes of live stock; this is due to the fact that larger masses of food are, as a rule, to be acted upon, and that the numerously sub-divided stomachs have a function which is more mechanical than digestive.

Most medicines appear to, at least to some extent, lose their effect after they have been repeated for a considerable length of time. Thus, as in the human race, stimulants may be given until they either lose the effect or the size of the dose must be doubled or quadrupled. Finlay Dunn writes: "The continued use of a medicine sometimes alters the degree of its action. Caustics and irritants, which exercise only topical action, exhibit, on repeated application, gradual increasing

activity; but, many medicines, when continuously given, have their power considerably diminished. Thus, arsenic eaters sometimes use with perfect impunity twelve or fifteen grains of arsenic daily, a quantity sufficient to poison three or four unhabituated persons."

It has also been noted that climate and surroundings will more or less modify medicinal action; different diseases also modify the effect of the remedies given; the surroundings of the patient, as to ventilation and cleanliness, also have a material effect upon medicinal action.

In the following list, the doses are those for the medium-sized animal of each class, and must be increased or decreased to suit the weight of the patient, as compared with the average of its class. The doses named are also the minimum, or smaller doses, and may, in severe cases, be increased one-fourth, one-half, or, in extreme cases, doubled.

NATURE, PROPERTIES, EFFECTS AND DOSES.

Aconite.—A tincture made from the roots and leaves of plants belonging to the Aconite family, and better known by their representatives, Monkshood, Friar's cap and Helmet plant; the tincture usually used in this country is made from the Monkshood, (*Aconitum Napellus*); it is a sedative, anodyne and diaphoretic; in excessive or improper doses it presents alarming and dangerous symptoms; its main use is in decreasing and controlling fevers, and in rheumatic complaints; it also affects and controls the action of the heart. It is valuable in milk fever and also in cases of diseases of the heart. Horse, thirty drops; cow, thirty-five drops; given with water.

Alcohol.—A stimulant, intoxicant, diuretic and diaphoretic; it is largely used in the preparation of tinctures, and these, when prescribed in large doses, often produce unexpected effects, on account of the action of the alcohol which they contain; when diluted with two parts of water to one of alcohol, it becomes the "diluted alcohol" of the druggist. Horse, two and one-half ounces; cow, three ounces; given with water or other liquid.

Aloes.—Usually found under three names, given on account of slight variations in the character of the product and on account of the location in which it is produced; thus, we have Barbadoes aloes from the *Aloe vulgaris; Socotra aloes*, from the *A. socotra* and African aloes from the *A. spictae.* It is a strong purgative, and in overdoses produces injurious effects, but in veterinary practice it is largely relied upon for its action as a purgative. Horse, four drams; cow, four to five drams.

Alum.—Sulphate of alumina and potash; will dissolve in about fourteen times its weight of water; a strong astringent; it is used to stop hemorrhages, and in cases of dysentery; dissolved in water, it is an excellent wash for collar sores and for any abrasion of the skin; the solution should be kept in the stable at all times, and used as a wash for sore teats, saddle galls, etc. Dose, internally, horse, two and one-half drams; cow, three drams. It is useful for destroying and preventing the abnormal growth on ulcers, known as "proud flesh," but for this purpose it must be "boiled," and is known to the trade as "burnt alum." As a veterinary remedy, it is useful in cases of colic and similar diseases.

Ammonia.—(Aqua Ammonia or spirits of hartshorn) is a stimulant, diuretic and antispasmodic; internally and undiluted, it is a powerfully corrosive poison, and it is dangerous in inexperienced hands; it is seldom used internally and usually constitutes an ingredient in washes and lotions; in some diseases it is useful for counteracting acids and their action; applied to the skin in an undiluted form, it is a mild blister and counter-irritant; muriate of ammonia (*sal ammoniac*), may be used instead of the aqua ammonia, and by some is preferred; for outward applications, four drams of sal ammoniac may be dissolved in a pint of water; if accidentally administered in excessive doses, the best antidote is vinegar or lemon juice. Horse (internally), one-half ounce; cow, half to three-quarters of an ounce.

Arnica (*tincture*).—Prepared from the flowers of the *Arnica montana* or Leopard's bane; increases the pulse, excites the kidneys, and is useful as an outward application to wounds and bruises; in some conditions of the system it acts as a stimulant, but it is possible that this action may be due to the alcohol used in the preparation of the tincture. Horse, (internally), one dram; cow, same amount; given with water.

Assafœtida.—A gummy material obtained from the juice of the *Ferula Assafœtida*; an inferior article is also made from the *Narthex Assafœtida*; the root is sliced, and as the gum exudes and hardens, it is scraped off; this drug is much adulterated; acts as a stimulant, expectorant, vermifuge and antispasmodic; a tincture is prepared by dissolving four ounces of the gum in one quart of alcohol; the tincture, in the diluted form, is sometimes used as an injection for worms near the outlet of the rectum; horse, two and one-half drams; cow, three drams. May be given in a ball or rubbed down in water; the tincture is not usually given internally.

Antimony (*tartar emetic*).—Acts as an emetic, a sedative and diaphoretic; applied of full strength externally, it acts as a mild blister; horse (as a sedative), two drams; cow, three drams.

Aromatic ammonia.—A stimulant, diuretic and antispasmodic; in some diseases used to counteract the formation of acids; horse, one and one-half ounces; cow, two and one-half ounces.

Arsenic.—A dangerous poison; not to be used by an inexperienced person; acts as an alterative and nerve-strengthener; horse, four grains; cow, six grains. Use not advised if it can be avoided.

Acetic acid.—A stimulant, and, applied externally, a counter-irritant; diluted with seven to ten parts of water, it forms the vinegar of the housewife. Horse, one dram; cow, one and one-half drams.

Balsam copaiva.—Is the solidified juice of a South American tree; is very often adulterated with castor oil and oil of turpentine; it is a stimulant, expectorant and diuretic; is mainly used on account of its action upon the kidneys and urinary organs; when reduced by the addition of a liquid, it is an excellent application for obstinate ulcers, but for this purpose should be reduced with water. Horse, three drams; cow, three and one-half drams.

Belladonna (extract).—Prepared from the leaves of the *Atropa belladonna*; it acts as an anodyne, antispasmodic and narcotic; is an unsafe remedy in the hands of the amateur practitioner; in excessive doses, is a powerful narcotic poison; it is very valuable in all diseases of a spasmodic character; is sometimes used in rheumatic and neuralgic diseases. Horse, two drams; cow, two and one-half drams. Given as a powder; horse, two ounces; cow, same amount.

Benzoin.—Obtained from a tree growing in Sumatra; the juice of the tree flows out through incisions made in the bark, and is collected when solidified; if perfectly pure, it is entirely soluble in alcohol; acts as an expectorant, antispasmodic and (in certain diseases) as a stimulant; used largely in all diseases of the mucus membrane and in colds; seldom pure. Horse, one ounce; cow, one and one-half ounces.

Bismuth (sub-nitrate).—A white, metallic powder used as medicine in cases of inflammation of the stomach or bowels; soothes all kinds if irritation; useful in indigestion, dysentery and similar diseases. Horse, two drams; cow, three drams.

Borax.—Used in a solution with water is useful in the destruction of parasitic life; internally it quiets the nerves and stimulates the kidneys; to wounds in the skin, with water, it acts as an astringent, and is sometimes used as an application to ulcers and obstinate sores. Horse (internally), four drams; cow, three-quarters of an ounce.

Buchu.—Prepared from the leaves of a South American shrub (*Barosma crenata*); acts as a stimulant, antispasmodic, tonic and diuretic; used in urinary diseases; supposed to be beneficial in cases of stone in the bladder. Horse, four drams; cow, half ounce.

Boneset.—A common plant, sometimes known as Thoroughwort (*Eupatorium perfoliatum*), acts as a stimulant, diaphoretic, tonic and emetic; the warm infusion of the dry leaves is a mild emetic, but if steeped in cold water, or if the infusion is allowed to become cold, much of its power as an emetic is lost; in large doses, in the absence of anything more active, may be used as an emetic in cases of poisoning; if given with other emetics, it appears to increase their action. Horse, three-quarters of an ounce; cow, one ounce.

Bluestone (*Copper sulphate*).—A metallic remedy; in large doses a dangerous poison; in mild doses an astringent and tonic; mainly used with water, as an application to ulcerous sores, foul claw, foot rot and kindred troubles; internally it acts as a tonic; for ophthalmia (sore eyes), if dissolved in water, at the rate of five grains to two ounces of water, it forms an excellent wash; in double this proportion, it may be used as an external application. Horse (internally), one-half dram; cow, one dram.

Bromide of potassium.—A colorless salt with peculiar shaped, quadrangular crystals; very soluble in water; acts as a sedative to nervous action; useful in scrofulous diseases of all kinds; one dram of the bromide with an ounce of lard forms a valuable ointment. Horse (internally), three drams; cow, four drams.

Balsam of Peru.—Obtained from a South American tree (*Myrospermum Peruiferum*), by making incisions in the bark and collecting the exuding juice as soon as solidified; is of a dark, reddish color, and soluble in alcohol; is a stimulant, expectorant and anti-spasmodic; useful in colds, catarrh, etc.; made into an ointment with equal parts of lard or tallow it is excellent for external sores of all kinds. Horse, (internally), one ounce; cow, one and one-fourth ounces.

Castor oil.—The expressed juice of the castor oil plant; the cold-pressed is most valuable; the seeds are a dangerous poison if taken in any great amount; it is a mild cathartic and particularly useful in the treatment of cows about to calve or such as are subject to milk fever; may be safely given in all cases where a purgative is required, and is, perhaps, the safest of its class. Horse, one pint; cow, one and one-fourth pints.

Calomel (*sub-chloride of mercury*).—Used as a purgative, but is somewhat dangerous on account of the increased liability to colds during its use; in small doses it acts as an alterative. As a purgative: Horse, one dram; cow, two drams. As an alterative: Horse, one scruple; cow, two scruples.

Camphor.—Obtained by boiling the wood and roots of an evergreen tree (*Laurus camphora*), growing in the East Indies; soluble in alcohol;

acts as a sedative, antispasmodic, and diaphoretic; allays nervous excitement from any cause; is useful in causing sleep; is a valuable addition to ointments and liquid applications for sores of all kinds. Horse (internally), one and one-half drams; cow, two drams.

Cayenne pepper.—Acts as a powerful stimulant; combined with other remedies, it is often used to increase vital action; it is a stimulant to the stomach and bowels; useful in colds and catarrh; applied to the skin it is counter-irritant and produces, to a limited extent, the same action as mustard. Horse (internally), two and one-half drams; cow, three drams.

Carbolic acid.—Acts as an antiseptic, astringent, disinfectant, and a sedative; diluted with water and applied to ulcerous sores, it acts as a disinfectant; to wounds, it acts as an astringent. Horse (internally), three-quarters of a dram; cow, same dose, (diluted).

Catechu.—Extracted from a tree growing in the East Indies (*Acacia catechu*); is a powerful astringent, and is used in chronic diseases of the bowels; also used in cases of hemorrhages of the bowels; as an infusion, it is useful for cracks in the skin, sore teats, sore mouth and kindred troubles. Horse, three drams; cow, four drams.

Chloroform.—Internally as a stimulant; inhaled, an anaesthetic; dangerous in inexperienced hands; remedy for over-application, the inhalation of ammonia; internally, it is used as a sedative in spasmodic diseases of the throat and bronchial tubes; externally, as a liniment it may be used for all kinds of painful sores or ulcers. Horse (internally), one and one-half drams; cow, same dose.

Cinchona (*Peruvian bark*).—Obtained from several varieties of trees of the Cinchona family growing in South America; as sulphate of quinia, it is used largely as an anti-periodic and stimulant; for intermittant fevers it is invaluable; it also acts as a mild tonic and as an anti-septic; equal parts of sulphate of quinia and tartaric acid dissolved in water, form an excellent cooling lotion to all kinds of indolent ulcers. Horse (internally), two drams; cow, same dose.

Chamomile.—The flowers of a common plant (*Anthemis nobilis*), dried and used as a tincture, acts as a tonic and stimulant; flowers should be gathered before they have assumed the yellow tint; useful in all cases of irritation of the stomach and bowels; given warm, it acts as an emetic, and in connection with other emetics, will increase and quicken their action. Horse, one ounce; cow, one and one-half ounces.

Chloral hydrate.—A solution of chloral in water decreases the action of the heart; lowers the temperature of the body; lessens respiration; varies somewhat in its action with different patients; dangerous unless

its action and effects are perfectly understood. Horse, one-third of an ounce; cow, same dose.

Colchicum.—From the seeds and bulbs of an English plant (*Colchicum autumnale*); made by steeping these portions of the plant in alcohol, wine or vinegar; in large doses is a dangerous narcotic poison; used in the form of a tincture, it is beneficial as a sedative, cathartic and diuretic; useful in all cases of a rheumatic nature. Horse, one-half dram; cow, one dram.

Columbo.—The product of an East African plant (*Cocculus palmatus*), the root is powdered and reduced with alcohol and the solid drug obtained by evaporation; it is an excellent tonic; excellent in cases of dysentery and diseases of the intestines; an American plant possesses the same properties, but to a less degree. Horse, two drams; cow, one-quarter ounce.

Croton oil.—A somewhat dangerous purgative unless its action is well understood; mainly used after the failure of other and milder purgatives; obtained from the seeds of an East Indian plant (*Oleum tiglii*); if mixed with olive oil and applied externally it causes irritation; for external application it should be mixed with four parts of olive oil; should not be used by the amateur practitioner. Horse, ten drops; cow, twenty drops.

Cantharides (Spanish flies).—Act as a diuretic and stimulant; a dangerous remedy if not properly given and understood; likely to cause complications in the urinary organs. Horse, four grains; cow, seven grains.

Cream of tartar.—Acts as a mild diuretic, and a safe and non-injurious remedy; should be dissolved in water; is a valuable application in cases of sore throat. Horse, one ounce; cow, one and one-half ounces.

Cod liver oil.—Acts as a tonic; aids the digestive organs and stimulates their action.

Digitalis.—Prepared from the leaves of the Foxglove (*Digitalis purpurea*), which grows in many parts of Europe; in large doses, it is a dangerous narcotic poison; in proper doses it is a sedative, diuretic and reduces the action of the pulse; its effects should be closely watched, for it has the reputation of accumulating in the system, and of thus producing unfavorable results when least expected; overdoses may be counteracted by the free administration of emetics and the use of ammonia and other stimulants. Horse, fifteen grains; cow, one-half dram.

Dandelion.—An almost universal perennial plant which has diuretic

properties, and which also acts as an aperient; mainly useful in diseases of the skin and digestive organs; known as taraxicum; roots should be gathered in the autumn. Horse (extract), one ounce; cow, one and one-half ounces.

Ether (*Sulphuric ether*).—Acts as a stimulant and anti-spasmodic; is highly inflammable and must not be brought near a light; dangerous in inexperienced hands; used for cramp and spasms of the stomach; used externally and allowed to evaporate rapidly; it is a refrigerant. Horse, one and one-half ounces; cow, two ounces.

Ergot.—Produced by a diseased condition of rye, known as smut or spurred rye; mainly used to produce contractions of the uterus; if given in too large doses, or if moderate doses are continued for too long a period, it is apt to produce alarming symptoms; used in some cases to check hemorrhages, but its effect for this purpose is doubtful. Horse, one-half ounce; cow, three-quarters of an ounce.

Elecampane.—Prepared from the root of a Japanese plant (*Inula Helenium*), and is sometimes grown in this country; the native plant does not produce the same effect as that imported; roots should be gathered in the autumn of the second year of their growth; applied externally, the decoction acts favorably in skin diseases. Horse (powdered root), eight drams; cow, ten drams; horse (decoction), four fluid ounces; cow, five fluid ounces.

Flaxseed.—Two ounces of the seed infused in a quart of hot water forms a mild laxative, and may be safely used in mild cases of diseases of the intestines and stomach; may be given in the form of linseed oil in pint doses, twice each day.

Feverfew (*Pyrethrum Parthenium*).—Leaves are used as an infusion in cases of colds, worms and urinary diseases; may be given freely as an infusion, or as a dilutant for other remedies; acts as a tonic, and is useful to relieve pain in the intestines.

Ginger (*Zingiber officinale*).—The powdered root of an East Indian plant, and is also produced in the West Indies; used for diseases of the bowels and digestive organs; is also used in connection with other remedies, as a poultice for indolent sores. Horse, one ounce; cow, one and one-half ounces.

Glauber salts (*Sulphate Soda*).—Acts as a cathartic, and if in small doses, as a diuretic and laxative; much used as a cathartic. Horse, one-half pound; cow, one pound.

Gentian.—Used as a tonic and promoter of the appetite; made from the root of a European plant (*Gentiana lutea*); must not be given in cases of inflammation of the stomach or intestines; larger doses cause

vomiting; sometimes used as a vermifuge. Horse, four drams; cow, one ounce.

Galls (Oak).—Used in the powdered form, in cases of severe diarrhœa; acts as an astringent, and forms one of the most powerful; their action is increased by the addition of a small portion of alum; useful as an injection in cases of prolapsus ani; one of the best remedies for an overdose of tartar emetic. Horse, five drams; cow, one and one-fourth ounces.

Garlic (Alium sativum).—Acts as an expectorant, stimulant, diuretic and sedative; the root is the portion used; macerated in water and boiled, or may be given in the dry form; used in some cases as a counter-irritant; onions may be substituted in all cases in which garlic is prescribed.

Ginseng.—The root of a perennial plant, growing in the Middle and Southern States; acts as a mild tonic and stimulant; is seldom used in veterinary practice, the stronger stimulants and tonics being preferable on account of the smaller doses required to produce a given action; sometimes used as a vermifuge.

Hemp-Indian (extract).—A resinous exudation of the hemp (*Cannabis satava*); acts as an antispasmodic, a soporific and narcotic; in large doses is dangerous, producing a peculiar kind of intoxication; is said to be a promoter of appetite; sometimes used in cases of rheumatism and colds. Horse, three-quarters of one dram; cow, one dram.

Henbane (Hyoscyamus, extract).—The product of a biennial plant of Southern Europe (*Hyoscyamus nigra*) known as Henbane; the leaves produced during the second year are used; in large doses, it is a narcotic poison of a dangerous character; acts as an anodyne, antispasmodic and narcotic; sometimes added to cathartic remedies to prevent bad after effects; diminishes pain and, in some cases, induces rest by allaying nervous excitement; is often substituted for opium in practice, as it does not cause constipation; used for rheumatic affections. Horse, two drams; cow, three drams.

Horse-mint.—A well known and common plant; leaves and smaller stems are used; act as a carminative, stimulant, sudorific and mild diuretic; is used in many digestive troubles, and is supposed to prevent or relieve the formation of gases; produces perspiration and acts as a mild emetic. May be given in the form of an infusion in large amounts.

Horse-radish.—Root and leaves (if picked while young), act as an emetic if infused and given warm; useful in rheumatic affections; also promotes digestion; useful in an enfeebled condition of the digestive

organs, but, if continued for a great length of time, acts too much as a stimulant.

Iodine.—Prepared from the ashes of sea weed; internally, it acts as a diuretic and alterative; externally, it subdues and prevents the spread of skin disease; applied to the outer rim of ulcers and sores, it gives relief from the pain; in large doses it is a dangerous corrosive poison; not to be used by the amateur as an internal remedy; safe as an external application. Horse (internally), twelve grains; cow, fifteen grains.

Ipecacuanha.—Prepared from the root of a perennial plant growing in South America; in moderate doses it increases perspiration and diminishes arterial action; in small doses it promotes digestion and acts as a tonic; combined properly with opium, its properties appear to be intensified and increased; if mixed with olive oil and rubbed on the skin by prolonged pressure and friction, counter-irritation may be produced. Horse, five drams; cow, same dose.

Iron (peroxide, carbonate and iodide).—Used mainly as a tonic; most safely administered as a carbonate or sulphate; in the form of a sulphate it is an irritant, tonic and astringent; in a solution of eight grains to a fluid ounce of water, it is an excellent application to all eruptions on the skin; in overdoses, it acts as a poison. In the form of an iodide, it must be given in much smaller doses; in fact, this form should be avoided by the careful practitioner. Horse (sulphate and carbonate), three drams: cow, four drams.

Jalap.—The root of a Mexican plant (*Ipomœa jalapa*), acts as a cathartic; in large doses it produces griping and nausea; if a few grains of cream of tartar is added, all of its properties are increased; it should never be used in cases involving an inflammatory condition of the intestines; useful in all swellings of the limbs. Horse, five drams; cow, same dose.

Juniper (berries).—Act as a stimulant and a diuretic; may be given in the form of dried berries or in that of an expressed oil. Horse (berries), nine drams; cow, ten drams; in an oil, horse, fifty drops; cow, same dose.

Kino.—From the juice of an East Indian tree (*Pterocarpus marsupium*), a somewhat strong astringent; used in cases of diarrhoea, and may be substituted for almost any other astringent found in veterinary practice; the powdered kind, if blown into a wound or into a bleeding nostril, has the power of retarding or stopping the flow of blood; lint powdered with it and placed on or in a wound, will produce excellent effects; sometimes given in the powder form and sometimes as a tincture. Horse, one-half ounce; cow, three-quarters of an ounce.

Laudanum.—The concrete juice of the seed vessels of the poppy; causes giddiness, nausea, tremors and nervous derangements in various forms; usually accompanied with constipation, and is therefore to be avoided, if possible; in large doses, a dangerous remedy; the antidotes are strong coffee and external counter-irritation. Horse, one ounce; cow, one and one-half ounces.

Lime water.—Mainly used as an anti-acid and corrector of flatulence and kindred troubles; in large doses, it acts as an astringent. Horse, four and one-half ounces; cow, five ounces.

Lead (Acetate of lead).—Better known as sugar of lead; dissolved in water in the proportion of four grains to the fluid ounce of water, it forms an excellent external application for inflammation of the eyes and nostrils; sometimes given internally to check hemorrhages, but its use for this purpose is of doubtful utility; is also used as a sedative and an astringent. Horse (internally), one scruple; cow, two scruples.

Linseed oil.—See flaxseed; used as a laxative. Horse, one and one-half pints; cow, two pints.

Lobelia.—Prepared from the leaves and seeds of the *Lobelia inflata*; acts as a nauseant, expectorant, antispasmodic and sedative; useful in obstinate coughs and disease of the throat and lungs; given to produce relaxation of the muscles and in cases of lockjaw; mixed in a poultice with elm bark, it is a useful application to fractures and all cases involving external inflammation; in too large doses it will cause inflammation of the stomach and intestines. Horse, one and one-half drams; cow, two drams.

Logwood.—The wood of a tree growing in tropical America; acts as an astringent and non-irritating tonic; colors and otherwise affects the urine; should never be given with lime water or chalk.

Magnesia.—Used to correct acidity of the stomach, formation of gases and indigestion; if given in cases where acidity does not exist, it will, in sufficient doses, act as a purgative; used in other forms. Horse, one and one-half ounces; cow, two ounces.

Magnesia (Sulphate).—Better known as Epsom salts; a purgative and laxative; more used than any other purgative. Horse, one-half pound; cow, one pound.

Mandrake.—The roots of the May-apple (*Podophllyum peltatum*), is a cathartic, emetic, alterative and laxative; has the same effects as jalap; often used in affections of the liver and causes a healthy flow of bile; given either in the form of the powdered root or as a tincture.

Mustard.—Given internally, acts as an emetic and irritant; applied to the skin, causes counter irritation.

Myrrh.—The gummy and resinous juice of a tree growing in Arabia; acts as a stimulant and tonic; useful in diseases of the throat and bronchial tubes; increases expectoration. Horse, three drams; cow, four drams.

Nux vomica.—From the seeds of an East Indian tree (*Strychos Nux vomica*); is an energetic poison and a dangerous remedy; causes twitching of the muscles; the active principle is the alkaloid strychnia; camphor, sweet oil and salt are the best antidotes. Horse, fifteen grains; cow, twenty grains.

Nitre (*Nitrate of potassa*).—In large doses is a dangerous irritant; safest when administered in mucilaginous drinks; quite effective as a diuretic, and the one most commonly used; in certain diseases it acts as a stimulant. Horse, six drams; cow, eight drams.

Oil of turpentine.—Is an irritant, stimulant, cathartic and diuretic; increases the flow of urine, and reduces mucous discharges; mixed with castor oil forms an excellent vermifuge; is used in lotions as a counter-irritant; sometimes used in inflammation of the bladder. Horse, one-half an ounce; cow, one ounce.

Olive oil.—Given as a mild laxative; used in coughs and catarrh; much used in the composition of liniments. Horse, one and one-half pints; cow, two pints.

Opium.—See laudanum; narcotic, sedative and anti-spasmodic. Horse, one-half ounce; cow, three-fourth ounces.

Peppermint (*oil*).—Prepared from the common peppermint (*Mentha piperita*); a stimulant, antispasmodic, carminative and stomachic; valuable to check nausea; the weak and warm infusion may be used in large amounts; excellent in all cases approaching spasmodic action. Horse (oil), twenty drops; cow, twenty-five drops.

Pepper (*black*).—Used as a stimulant and stomachic; red pepper most used. Horse, two drams; cow, two and one-half drams.

Potassa.—Usually given in one or more of its seven forms, viz: acetate, bicarbonate, nitrate, chlorate, iodide, bromide and cyanide; amount varies with the form used and the cases to which it is administered. Of the nitrate and bi-carbonate, horse, seven drams; cow, one ounce. Canide and chlorate, horse, three drams; cow, same dose.

Quinia (*Sulphate*).—See cinchona.

Rhubarb.—Obtained from the rhubarb plant; the best roots are those obtained in Russia and Turkey; an active cathartic and astringent; in small doses it acts as a laxative; if burned, its astringency is increased, but its purgative properties are decreased. Horse, one ounce; cow, two ounces.

Strychnia.—The active principle of nux vomica; a nerve tonic; a dangerous poison in over doses; used in cases of nervous debility and rheumatism. Horse, one and one-half grains; cow, same dose.

Squills.—In small doses causes nausea and depression of the pulse; in large doses a dangerous irritating poison; must never be given when inflammation is present in any form. Horse, one-half dram; cow, same dose.

Spanish flies.—See cantharides.

Sodium chloride (common salt).—A tonic, alterative, purgative and vermifuge; sometimes given to check hemorrhages, but of doubtful utility; mixed with mustard is one of the best emetics to remove poison from the stomach. Horse, one and one-half ounces; cow, two ounces.

Silver nitrate (Lunar caustic).—Acts as a nerve tonic; seldom used and dangerous unless well understood; sometimes used as an external application to warts and excrescences of various kinds. Horse (internally), five grains; cow, six grains.

Stramonium.—Leaves and seeds of the Jamestown weed (stink weed); in large doses is highly poisonous; in proper doses it acts as a narcotic, anodyne and sedative; the fresh leaves, bruised and applied externally, form an excellent poultice for rheumatic complaints; in ointments it is valuable in skin diseases. Horse (internally), twenty grains; cow, three-quarters of a dram.

Sulphuric acid.—A dangerous remedy in inexperienced hands; is a tonic and caustic; is sometimes used as a refrigerant; sometimes used, very much diluted, as an application externally to diseases of the skin. Horse, one dram; cow, two drams.

Sulphur.—Usually given in connection with cream of tartar; is used as an ointment for itch and skin diseases; mixed with coal oil, is excellent for lice on cattle; if too much coal oil is applied, it may remove the hair; sometimes administered in rheumatic troubles. Horse, three ounces; cow, five ounces.

Sweet spirits of nitre.—Is a stimulant, antispasmodic, diuretic and diaphoretic; the inhalation of the vapor is dangerous; must not be kept for any great length of time, for it then not only loses its valuable properties, but also acquires some that are disadvantageous. Horse, one ounce; cow, two ounces.

Soap (household article)).—Acts as a diuretic, laxative, anti-acid and tonic; the pure forms of castile soaps are best. Horse, one and one-half ounces; cow, two ounces.

Tar.—Used as an expectorant and antiseptic; valuable in chronic coughs; the inhaled vapor is beneficial in bronchial troubles. Horse, three-quarters of an ounce; cow, same dose.

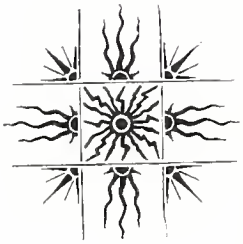
Tobacco. —A narcotic, sedative and antispasmodic; used in ointments for skin diseases; the oil is an active poison. Horse, four drams; cow, same dose.

Turpentine.—See oil of turpentine.

Tartaric acid.—See cream of tartar.

Valerian.—The root of a perrennial European plant (*Valeriana officinalis*); is a tonic, antispasmodic and vermifuge; in large doses it causes nervous disturbance. Horse, two ounces; cow, three ounces.

Veratrum.—A dangerous remedy in unskillful hands; not to be used except by advice of the veterinarian; acts as a sedative. Horse, one scruple; cow, one-half dram.

Venice turpentine.—Properties, effects and doses same as oil of turpentine and turpentine.

Zinc (*sulphate*).—Sometimes used as an emetic, but mainly used as an ingredient of ointments for external application. Horse, one and one-half dram; cow, two drams.